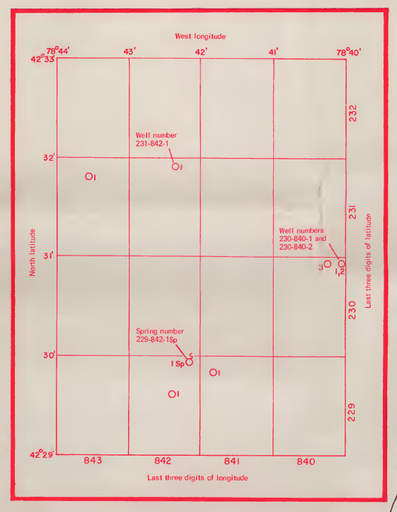
Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY, Albany, N.Y.

BASIN PLANNING REPORT ENB 3 PLATE 1
Published by NEW YORK STATE WATER RESOURCES COMMISSION
CONSERVATION DEPARTMENT, DIVISION OF WATER RESOURCES



MAP SHOWING LOCATIONS OF WELLS, SPRINGS, AND MISCELLANEOUS DATA-COLLECTION SITES IN THE ERIE-NIAGARA BASIN, NEW YORK

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Topographic Base from AMS Quadrangles 1:250,000 scale

EXPLANATION

SHALE UNITS

Paleozoic — Devonian — Upper Devonian

Dct — Conneaut Group of Chadwick (1934)

Dc — Canadaway Group of Chadwick (1933)

Dj — Java Formation

Dw — West Falls Formation

Dg — Genesee and Sonyea Formations

Middle Devonian

Dl — Ludlowville and Moscow Shales

Dm — Marcellus and Skaneateles Shales

Note: Yields of wells range from less than 1 gpm to about 40 gpm, more commonly from 3 to 15 gpm.

LIMESTONE UNITS

Do — Onondaga Limestone

Silurian — Upper Silurian

Sb — Bertie Limestone and Akron Dolomite

Note: Yields range from about 1 to 300 gpm; the largest yields are obtained in the western part of the outcrop belt. Yields of 100 gpm are generally obtainable in some parts of the outcrop belt, but yields of 30 gpm or less are more common.

Sc — Camillus Shale

Note: Yields of wells range from a few gallons per minute to 1,200 gpm. The larger yields (300 to 1,200 gpm) are obtained at places in the western end of the outcrop belt. The maximum yield available generally is less than 50 gpm.

Middle Silurian

Sl — Lockport Dolomite

Note: Yields of wells average 30 gpm and range from about 1 to 100 gpm.

Geologic contact

Inferred normal fault hachures on downthrown side

Basin boundary

Geology adapted from Broughton and others (1962), Buehler and Tesmer (1963), and Luther (1914).

BEDROCK GEOLOGIC MAP OF THE ERIE-NIAGARA BASIN, NEW YORK

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79°00' 78°45' 78°30' 78°15'

43°00'

42°45

42°30'

42°15'

NORTH

LAKE ERIE

SCALE
0 2 4 6 8 10 MILES
CONTOUR INTERVAL 20 FEET

EXPLANATION

Alluvium

Deposits of present-dey streams, composed of silt, sand, and gravel, where extensive. Along Cattaraugus Creek they ere mainly sand and gravel, as much as 15 feet thick, and provide a few small water supplies. Along Tonawanda Creek downstream from Attica, they are mainly silt. A minor water-bearing unit.

Outwash Deposits

Interbedded sand and grevel deposits laid down by glaciel streams. They were the last deposits to be formed in a particular valley. As a result, most deposits are thin and overlie lake deposits. They heve a high permeability but will yield large supplies only where thick. At Batavia they exceed 70 feet in thickness and yield 500 to 1,200 gpm to properly constructed individual wells.

Lake Deposits

Interbedded cley, silt, and fine sand deposited in glacial lakes. Sandy parts of the deposits may yield small supplies, but otherwise the unit is not water yielding.

Ice-Contact Deposits

Interbedded sand and gravel deposited by glaciel streams. Most ground-water supplies developed for municipalities are either exposed at the surface or buried beneeth lake and outwash deposits. Yield about 500 gpm to properly constructed wells.

Till

Nonsorted rock material deposited from glacial ice, generally forming a thin mantle over the bedrock. Has a low permeability and will yield only small supplies (sufficient for a household) from large-diemeter wells.

Bedrock Exposures

Exposures observed incidental to field studies.

Geologic Contact

Basin Boundary

Topographic Base from U.S.G.S. Quadrangles 1:62,500 scale

Geology adapted from Broughton and others (1962)
Buehler and Tesmer (1963) , and Luther (1914)

SURFICIAL GEOLOGIC MAP OF THE ERIE - NIAGARA BASIN , NEW YORK

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Ground-water discharge to streams in the Erie-Niagara basin

Station number	Stream-gaging station	Ground-water discharge, in mgd			
		Average	50-percent duration	90-percent duration	99-percent duration
1	Cattaraugus Creek at Gowanda	205	190	71	43
2	Cattaraugus Creek near Arcade	38	27	13	10
3	Buttermilk Creek near Springville	8.5	7.2	2.8	1.7
4	Eighteenmile Creek at North Boston	15	12	3	1.5
5	Cazenovia Creek at Ebenezer	20	12	2.7	1.2
6	Buffalo Creek at Gardenville	41	32	8.2	3.0
7	Buffalo Creek near Wales Hollow	20	16.5	5.3	2.0
8	Cayuga Creek near Lancaster	17	14.5	1.8	.3
9	Tonawanda Creek at Rapids	--	--	15	7.9
10	Tonawanda Creek near Alabama	--	--	12	6.5
11	Tonawanda Creek at Batavia	65	41	8.5	2.9
12	Little Tonawanda Creek at Linden	5.6	3.8	.5	.2
13	Ellicott Creek at Williamsville	10	8.4	.9	.02
14	Ellicott Creek at Millgrove	5.7	3.7	.5	.2

EXPLANATION

Average Annual Replenishment
(Million gallons per day per square mile)

0.2–0.4

0.4–1.0

1.0–2.0

2.0–4.0

Basin boundary

▲1
Gaging station and number
Number corresponds to number in table in upper right-hand corner.

Note: Uncolored areas are underlain by till or glacial lake deposits.

SCALE
5 0 5 10 15 20 25 MILES
CONTOUR INTERVAL 100 FEET

Topographic Base from AMS Quadrangles 1:250,000 scale

MAP SHOWING AVAILABILITY OF GROUND WATER IN SURFICIAL SAND AND GRAVEL DEPOSITS IN THE ERIE-NIAGARA BASIN, NEW YORK

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BASIN PLANNING REPORT ENB 3 PLATE 5
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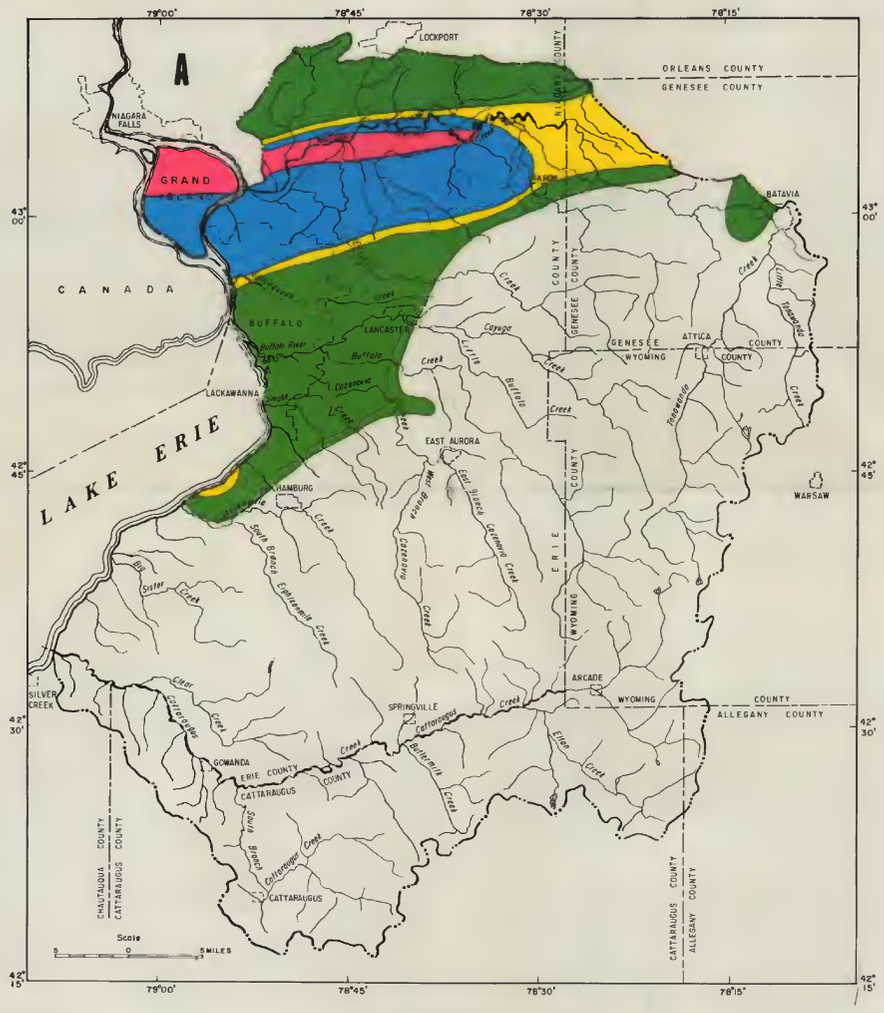


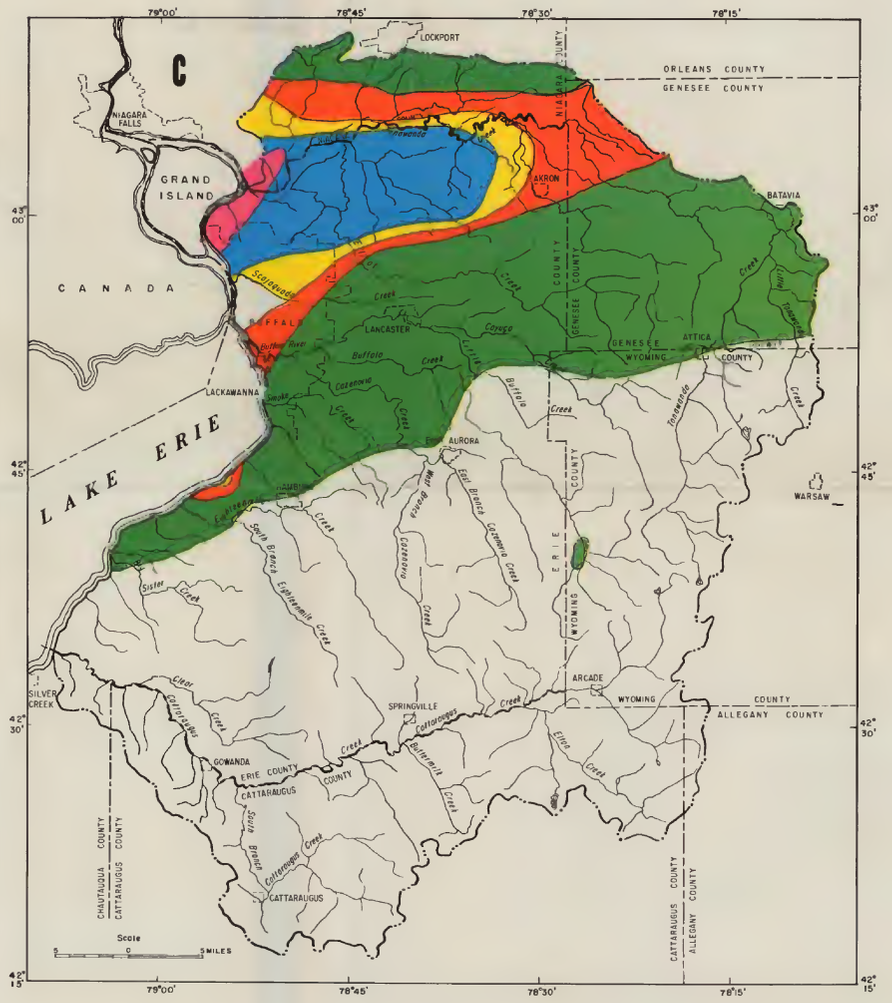
EXPLANATION

Sulfate content , in parts per million

0–100	100–500	500–1000	1000–1500	1500–2000

Basin boundary

SULFATE CONTENT OF WATER IN BEDROCK



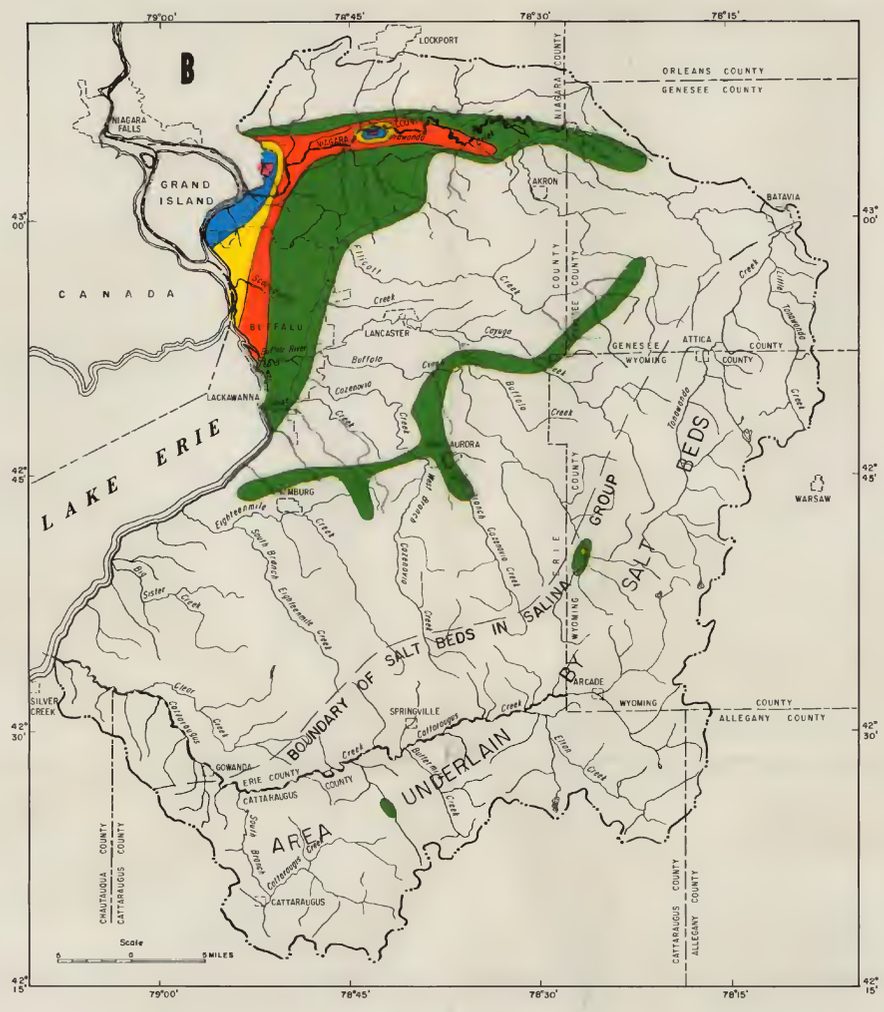
EXPLANATION

Hardness (as $CaCO_3$) , in parts per million

< 250	250–500	500–1000	1000–1500	1500–2000	2000–3000

Basin boundary

HARDNESS (as $CaCO_3$) OF WATER IN BEDROCK



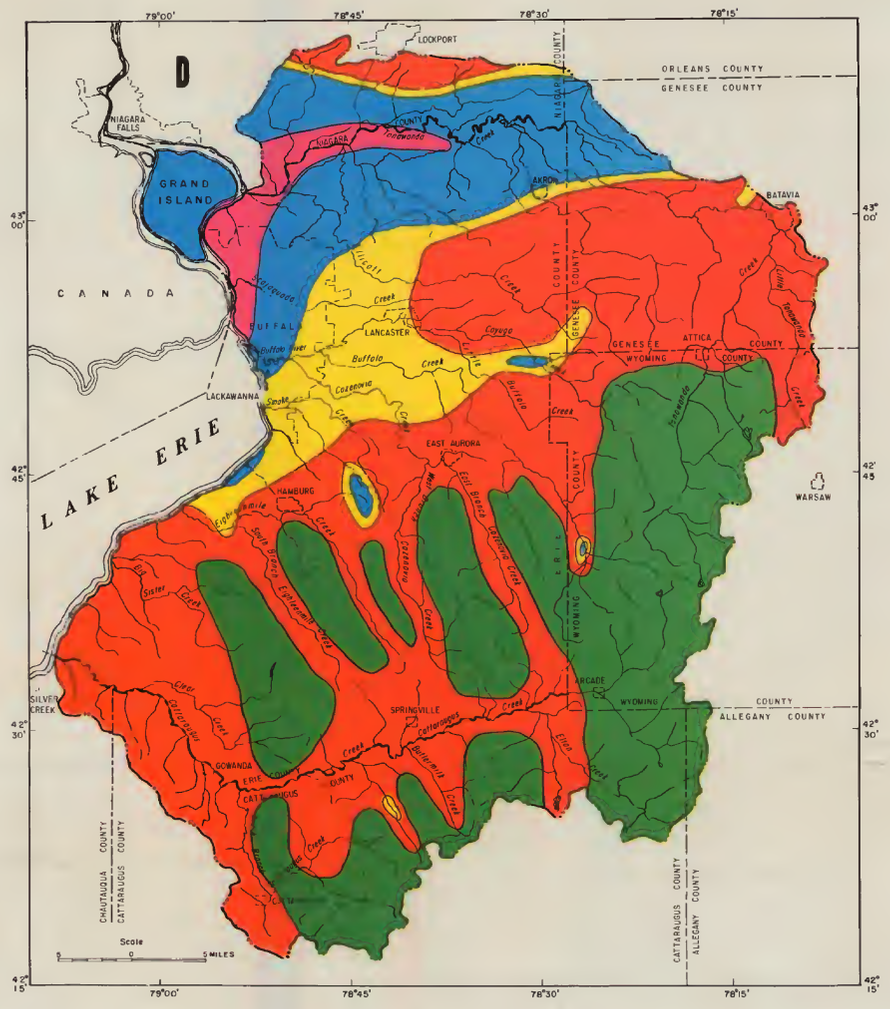
EXPLANATION

Chloride content , in parts per million

< 100	100–500	500–1000	1000–1500	1500–2000	2000–2500

Basin boundary

CHLORIDE CONTENT OF WATER IN BEDROCK



EXPLANATION

Specific conductance , in micromhos per centimeter at 25° C

< 500	500–1000	1000–1500	1500–3000	3000–9000

Basin boundary

SPECIFIC CONDUCTANCE OF WATER IN BEDROCK

MAPS SHOWING SULFATE AND CHLORIDE CONTENT AND HARDNESS AND SPECIFIC CONDUCTANCE OF GROUND WATER IN BEDROCK IN THE ERIE-NIAGARA BASIN, NEW YORK